Claims

[c1] What is claimed is:

1. A method of voltage modulation for computed tomography (CT) imaging comprising the steps of:

acquiring a set of cardiac signals having a plurality triggering pulses;

determining a period of delay after each triggering pulse;

after each period of delay, energizing a high frequency electromagnetic energy source to a first voltage;

acquiring a set of imaging data of a scan subject; and

after acquiring the set of imaging data, energizing the high frequency electromagnetic energy source to a second voltage until the period of delay after a next triggering pulse.

[c2] 2. The method of claim 1 wherein the second voltage is less than the first voltage.

[c3] 3. The method of claim 2 wherein the second voltage is zero.

[c4] 4. The method of claim 1 further comprising the step of:

determining a primary and a secondary imaging stage from the set of cardiac signals;

energizing the high frequency electromagnetic energy projection source to the first voltage during the primary imaging stage; and

energizing the high frequency electromagnetic energy projection source to the second voltage during the secondary imaging stage.

[c5] 5. The method of claim 4 further comprising the step of filtering low energy high frequency electromagnetic energy projected to the scan subject to reduce high frequency electromagnetic energy exposure to the scan subject.

[c6] 6. The method of claim 1 further comprising the step of determining a radiation dosage profile from the set of cardiac signals.

[c7] 7. A radiation emitting imaging system comprising:

a high frequency electromagnetic energy projection source configured to project high frequency energy toward a scan subject;

a detector assembly to receive high frequency electromagnetic energy attenuated by the scan subject and output a plurality of electrical signals indicative of the attenuation to a data acquisition system (DAS);

a control configured to:

determine a plurality of primary data acquisition stages and a plurality of secondary data acquisition stages;

energize the high frequency electromagnetic energy projection source to a first voltage during each data acquisition stage to acquire primary imaging data;

energize the high frequency electromagnetic energy projection source to a second voltage during each secondary data acquisition stage; and

reconstruct an image of the scan subject from the imaging data acquired during each data acquisition stage.

[c8] 8. The system of claim 7 further comprising a bowtie filter configured to filter a portion of the high frequency electromagnetic energy projected by the high frequency electromagnetic energy projection source to the scan subject.

[c9] 9. The system of claim 7 wherein each data acquisition stage is followed by a secondary data acquisition stage.

[c10] 10. The system of claim 7 wherein the control is further configured to drive the high frequency electromagnetic energy projection source to a zero voltage during each non-data acquisition stage.

[c11] 11. The system of claim 7 wherein the plurality of secondary data acquisition stages includes a plurality of non-data acquisition stages.

[c12] 12. The system of claim 7 further comprising a plurality of EKG sensors configured to acquire a set of EKG signals of a cardiac region of the scan subject.

[c13] 13. The system of claim 12 wherein the control is further configured to determine a data acquisition stage and a secondary acquisition system from the set of EKG signals.

[c14] 14. The system of claim 13 wherein the control is further comprised to

determine a number of subsets from the set of EKG signals and determine a triggering pulse within each subset and energize the high frequency electromagnetic energy projection source to the first voltage after a delay of the triggering pulse.

[c15] 15. A computer readable storage medium having a computer program stored thereon and representing a set of instructions that when executed by a computer causes the computer to:
analyze a set of cardiac motion signals acquired from a set of EKG sensors from a torso region of a scan subject;
determine from the set of cardiac motion signals a number of primary data acquisition stages and a number of secondary acquisition stages;
transmit a first voltage modulation signal to a voltage source configured to energize an x-ray projection source used to project x-rays to the scan subject for data acquisition, the first voltage modulation signal configured to drive the voltage source to a first voltage for each primary data acquisition stage;
acquire a set of imaging data; and
transmit a second voltage modulation signal to the voltage source, the second voltage modulation signal being configured to drive the voltage source to a second voltage for each secondary acquisition stage.

[c16] 16. The computer readable storage medium of claim 15 wherein the set of instructions further causes the computer to determine a dosage profile from the set of EKG signals and modulate the voltage source according to the dosage profile.

[c17] 17. The computer readable storage medium of claim 15 wherein the second voltage is less than the first voltage.

[c18] 18. The computer readable storage medium of claim 17 wherein the second voltage is zero.

[c19] 19. The computer readable storage medium of claim 15 wherein the set of instructions further causes the computer to reduce x-ray projections to the scan subject during the number of secondary acquisition stages.

[c20] 20. The computer readable storage medium of claim 15 wherein the set of instructions further causes the computer to determine the first voltage from a set of imaging parameters on a per imaging session basis.

[c21] 21. The computer readable storage medium of claim 15 wherein the number of secondary acquisition states includes a number of non-data acquisition stages.